



*James Lambert, C.E.T.
Centre Manager, Walker Advanced
Manufacturing Innovation Centre*

FROM THE CENTRE DESK

Innovation Continues

Good day,

As I begin my third year as Manager here at the Walker Advanced Manufacturing Innovation Centre, it's an exciting exercise for me to look back at the progress we have made to date, yet look ahead to the great plans we have for 2017 and beyond. It was with proud distinction that Niagara College ranked 7th in Canada and 3rd in Ontario in 2016 as a top research college, of which the Walker Advanced Manufacturing Innovation Centre is part. So much has taken place since our September 2016 newsletter, so it is difficult to disseminate all the details without turning this newsletter into a novel. Our centre continues to expand its resources, equipment and projects. Industry engagement has been very positive with a variety of applied research and technical service opportunities. This newsletter outlines the many developments since our last update. I invite you to spend a few minutes reading the great things that are happening in the Research & Innovation division of Niagara College in Advanced Manufacturing. I can assure you that the innovation continues...happy reading!

kindest Regards,
Jim Lambert, C.E.T.
Centre Manager

OPERATIONS UPDATE

TAC YEAR 4 BEGINS - FURTHER GROWTH AND PARTNERSHIPS PLANNED



As we conclude year 3 of our 5-year renewable Technology Access Centre grant, planning for further growth and expansion of our activities, we've been working hard over the last few months to put the finishing touches on our labs and maker spaces. New large wall signage has been completed which identifies the centre, with separate plaques to identify funders, donors, and technology partners.

Additional signage was introduced in the labs, which promotes our technology partners and the advanced manufacturing solutions we specialize in. We've been investing in external collaborations as well. Work has begun with intentionally networking with the public and private school boards on technology and trades development, most recently with tours of DSBN ihub as well as the new NCDSB Technology Centre at the Seaway Mall.

It is truly a privilege to be able to partner with the secondary schools to promote technologies and skilled trades in the

region, directly making a positive impact in addressing the shortages we have been reading about so much in the news as of late.

We recently also participated in the NIA's Connecting Educators with Industry initiative and have committed time towards executing their strategic plan in connecting academia with industry. Meetings continue with our academic deans to strategically incorporate more Applied Research learning in Advanced Manufacturing into the curriculum with some pilot projects underway in the winter term.

Discussions are still underway with SMEs currently interested in leasing incubation space from the Centre, with one space being utilized by ncTakeOff, Niagara College's hub for entrepreneurship. By exposing NC students to the concept of entrepreneurship, we're building an innovative, enterprising and challenge-embracing culture across campus, in Niagara and beyond.

INDUSTRY ADVISORY COMMITTEE A GIANT YEAR OF PROGRESS

The Industry Advisory Council reorganized in the spring of 2016, and in keeping with its terms of reference, affirmed members whose terms were continuing, while replacing those whose terms had expired, with a fresh representation from industry and economic development agencies. Subsequent meetings in June, September, December, and February rendered excellent discussion and guidance for operations and strategic planning going forward. Our Strategic Plan for years 4 and 5 is underway with a draft document to be circulated to our Industry Advisory Council when we meet again in early June. I wish to thank our IAC members for their dedication and service to our efforts, and for the wisdom and guidance they provide aligning our technology solutions with the ongoing needs of industry.

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STAFFING UPDATE

NEW RESEARCH LEADS ADD EXPERTISE FOR DIVERSE APPLICATIONS



Gordon Marezki, Research Lead

To further strengthen our scientific and technical staff, I am pleased to introduce Gordon Marezki, PEng, and Dr. Allan Spence, PhD, PEng, two part-time researchers who have been hired to support applied research and technical service activity. They will provide the necessary project management, guidance and communication with students and SMEs. Coming to Niagara College from the private sector, Gordon has run his own business for more than 12 years and has held many applied research government contracts in areas of engineering design, automation, manufacturing/fabrication and performance testing/validation.

Allan has degrees from the University of Waterloo in



Dr. Allan Spence, Research Lead

Applied Mathematics (BMath 1984) and Mechanical Engineering (MAsc 1986), and a PhD in CAD-based machining simulation from the University of British Columbia (1992).

His specialization in coordinate metrology and computer-aided design has led to work in the spacecraft, energy, textile and manufacturing industries. He has also been a faculty member in Mechanical Engineering at McMaster University for 22 years, where he completed numerous government-funded research awards and industry contracts, and supervised more than 30 graduate students. We welcome them both to our team. To find out more about our team click [HERE](#).

SUCCESS STORY

RESEARCH LAB TECH SOARS TO NEW HEIGHTS WITH JOB IN SPACE FLIGHT INDUSTRY

We wish to take this opportunity to wish Ben Laurence the best of luck as he exits his tenure with our Technology Access Centre into the realms of space exploration. The NC mechanical engineering technology grad, who has been working at as a Research Laboratory Technologist for the College's Walker Advanced Manufacturing Innovation Centre since graduating in 2015, is taking on the opportunity of a lifetime to work in the space flight industry. At the end of February, Ben moved to Seattle, Washington to embark on a new career in the space travel industry.

Laurence, 35, has been hired to work with the Structural Design and Configuration team at Blue Origin – an American, privately funded aerospace manufacturer and spaceflight services company set up by Amazon.com founder Jeff Bezos – where he will design, analyze, test, and fly structural components for the New Shepherd spacecraft

Although he will be missed, we are encouraged knowing



that his years spent with Niagara College faculty and staff are forever woven into the fabric of Ben's ongoing technological career.

The team looks forward to our next chapter; the opportunity that has now been created by this void, for the next technologist who will step up to the plate, join our team, and just like Ben Laurence...shine.

D&O CORNER

MARKETING EFFORTS CONTINUE

Dissemination and Outreach continues to be an important component of what your TAC does. Marketing opportunities bring recognition to our division, while generating new untapped leads for technical services and applied research opportunities. Our centre participated in several large conferences in 2016, including the 3D Printing for Health Conference (Mohawk College); the Western Ontario Manufacturing Conference (Lambton College); FabTech Canada (International Centre Toronto); and had a large display booth presence at the Advanced Manufacturing Conference (Toronto Congress Centre).

A major overhaul of the Research & Innovation website and rebranding of our operations name to reflect the Walker Advanced Manufacturing Innovation Centre was realized in 2016. Many new photos, client experiences and success stories were added to the content. Specific details regarding advanced manufacturing applications and equipment were also added for those wanting an itemized list of labs facilities, products and services.

Six Technical Service Bulletins were published in 2016, all with a focus on advanced manufacturing solutions for industry. These articles highlight different sectors within the manufacturing community, the clients design challenge and how the centre approached the problem, the deliverables, the benefits to the college and the benefits to the industry partner. We plan to add an additional 4 bulletins each year.

Click [HERE](#) and take a look around at all the content that we have added.



PROFESSIONAL DEVELOPMENT

2017 BREAKFAST & LEARN WORKSHOP SERIES



Training Workshops were reinstated in 2016, having been well-received and well-attended; the plan is to provide similar opportunities in 2017. Our goal is to provide training that would resonate with industry, creating an environment of continuous improvement and learning.

Topics covered last year included 3D Laser Scanning and Reality Capture; Quality Systems for SMEs; Funding Opportunities for SMEs; the CMEs Industry 2030 initiative; and 3D printing for Jig and Fixture applications. Slight adjustments are being made in 2017 to allow more SMEs to attend, with scheduling for morning workshops instead

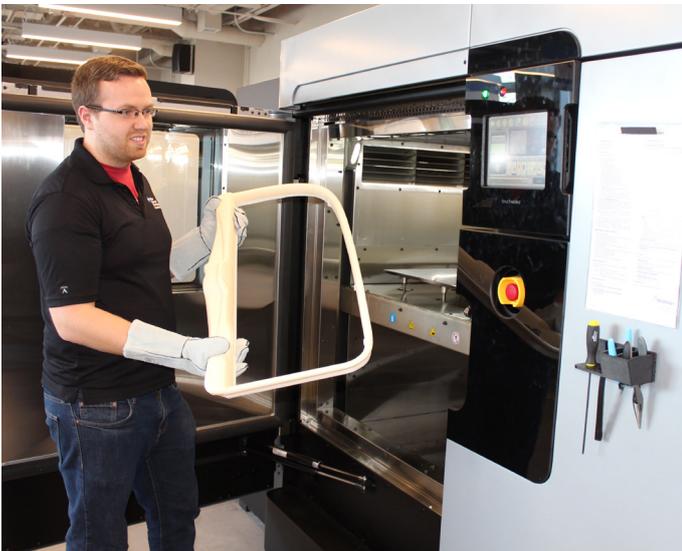


of midday. Our first 2017 Breakfast and Learn Workshop in January on the topic of “Practical Applications for 3D Printing For Your Business,” hosted by James Janeteas of Cimetrix Solutions, was a great success with 36 in attendance.

Our latest training opportunity “Practical Strategies to Develop, Grow Product Sales” took place March 29 at our Welland Campus, facilitated by Bryan C Webb, P. Eng. You will not want to miss any of our future workshops. Continue to check our [events page](#) for new training opportunities throughout the year.

EQUIPMENT UPDATE

EXPANDING OUR FDM 3D PRINTING CAPABILITIES



The Walker Advanced Manufacturing Innovation Centre has recently acquired and installed the Fortus 900mc 2nd Gen, the first 3D Printer of its kind in all of Canada. The Fortus 900mc is the most powerful FDM (Fused Deposition Modelling) system available, delivering remarkable production agility and high return on investment.

This purchase was made possible by the \$7.3M committed by FedDev to Niagara College for the Southern Ontario Network for Advanced Manufacturing Innovation. (see Funding Highlights).

Stratasys, the world’s leading additive manufacturing technology provider, has made the Walker Advanced Manufacturing Innovation Centre Canada’s exclusive test centre for all new 3D printing materials in development. By



utilizing our reverse-engineering expertise, we will be aiding Stratasys with critical geometric inspection information regarding new polymers, tips, and software modules.

Our centre is the first such beta test centre for Stratasys in Canada, with capability to 3D print many new materials currently unavailable to industry; request specialty materials that currently do not exist for 3D printing; and provide ultra-fast print times by experimentation with high-performance 3D printing tips.

We are excited to bring this type of technology to SMEs in the region, and help them adopt additive manufacturing into their workflow. We offer special thanks to our technology partner Cimetrix for their assistance in making this partnership with Stratasys possible.

ENGAGING INDUSTRY

CREATING INNOVATIVE SPACES FOR TECHNOLOGY ADOPTION

Effective engagement with the Niagara Industrial Association continues to be a key networking opportunity in raising the awareness and added value that our Centre brings to SMEs in the region. There were three opportunities in 2016 to showcase our technologies and projects with a Niagara College Research & Innovation display booth set up at each meeting. The collaboration with Canadian Manufacturers and Exporters (CME) through their Canada Makes initiative continues, with a collective aim to promote advanced manufacturing excellence and leadership in Ontario.

This includes working together to promote each other's capabilities, as well as holding joint workshops and events. Such activities included co-sponsoring of advanced manufacturing training workshops for industry, and the CME Industry 2030 roundtable discussions, which generated the "Manufacturing Growth, Innovation and Prosperity for Canada" report, presented on Parliament Hill in November 2016. Dr. Marc Nantel, Associate Vice-President of Research & Innovation at Niagara College, represented us at this event, and Niagara College was recognized by CME as



one of the Industry 2030 partners, since we had held one of CME's consultation sessions for the report.

The TAC continued its participation as an active member of Canada Makes Advanced Manufacturing Advisory Board, with representation at several meetings in 2016. The AMAB consists of experts in additive manufacturing who can be called upon to provide insight and guidance on trends and help define the direction for Canada in this sector.

STUDENT FOCUS

MEET THE NEW TEAM



Back Row from left to right: Gord Koslowski (Research Project Manager), Charles Lecompte (Senior Application Specialist), Lucas Howe (Mechanical Engineering Technology - Jr. Co-op), Nathaniel Landry (Mechanical Engineering Technology - Jr. Co-op), Gord Maretzki (Research Lead), Brock Husak (Mechanical Engineering Technology - Jr. Co-op), Dr. Al Spence (Research Lead), Brian Cunningham (Electrical Engineering Technology)

Front Row from left to right: Ben Laurence (Alumni), Gabriel Bylsma (Mechanical Engineering Technology - Jr. Co-op), Daniela Cortes Aristizabal (Mechanical Engineering Technology - Jr. Co-op), Jim Lambert (Centre Manager)

Absent: Mike Granton (Mechanical Engineering Technology), Andrew McCuaig (Mechanical Engineering Technology), Jacob Morris (Mechanical Engineering Technology), James Turner (Mechanical Engineering Technology), Rick Baldin (Faculty Research Lead), Bryan Mewhiney (Faculty Research Lead)

A total of 20 students have worked in our research labs since the last reporting cycle, with some returning to full-time studies in January, while others have begun their co-ops in the new year. This number is expected to grow in 2017 as new projects are vetted and approved for engagement. With every industry project or technical service we complete, this real-world experience is critical to our students' learning plans, and key to the success of our program as we not only build innovative solutions for SMEs, but also develop their future workforce. Some of these

students will soon be seeking jobs after graduation.

Should you know of any companies large or small that are hiring electrical, civil, or mechanical graduates, please pass the specifics on to Centre Manager Jim Lambert, so that the college's Career Focus department can be made aware of the opportunity.

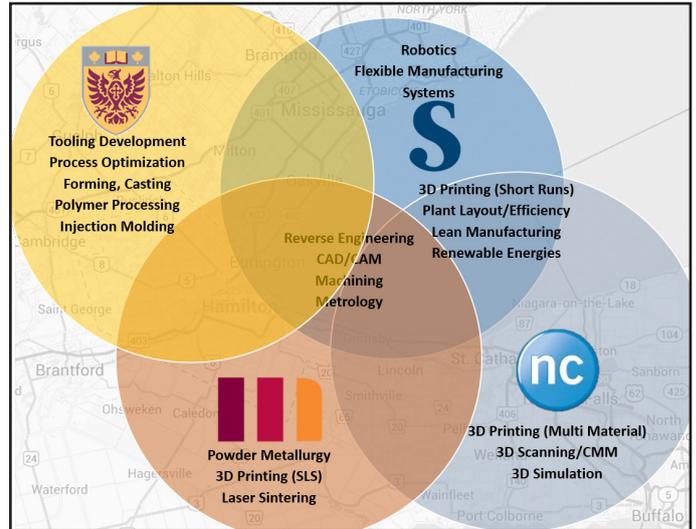
Niagara College prides itself on producing the finest students from our technology programs. Click [HERE](#) for a complete list of Technology Programs presently offered at Niagara College.

FUNDING UPDATE

SONAMI A REALITY IN NIAGARA



Southern Ontario Network for Advanced Manufacturing and Innovation



On Dec. 19, 2016, Vance Badawey, Member of Parliament for Niagara Centre, on behalf of the Navdeep Bains, Minister of Innovation, Science and Economic Development and Minister responsible for FedDev Ontario, announced a contribution of \$7.3 million to Niagara College. This non-repayable contribution, through the Investing in Commercialization Partnerships Initiative, helped solidify Niagara College's role in creating the Southern Ontario Network for Advanced Manufacturing and Innovation (SONAMI), in partnership with Mohawk College, Sheridan College and McMaster University.

SONAMI offers a "single-window" approach to supporting manufacturers' research and development needs, encouraging them to adopt and integrate disruptive advanced manufacturing technologies into their operations with the help of the network.

The project is expected to create or maintain 186

high-quality jobs, result in 170 new prototypes and up to 85 new products being commercialized. It will also provide opportunities for students from the SONAMI partner institutions to prepare for the manufacturing jobs of tomorrow.

Many Canadian small- and medium-sized manufacturers delay adopting new technology, because of the risk of making large, upfront investments without first testing their innovations.

Through the government's investment in this new, advanced manufacturing network in the Golden Horseshoe, Niagara College will help Canadian manufacturers address this challenge and speed up technology adoption. Should you have a project you would like to have considered for funding, please contact Elizabeth Best, our Business Development Coordinator, at 905-641-2252, ext. 4287, or email ebest@niagaracollege.ca.

SONAMI STAFFING UPDATE

PROJECT MANAGER & ASSISTANT



Krystyn Keir SONAMI Project Manager



Janice Rowe SONAMI Project Assistant

Krystyn Keir is an industrial engineer with an MBA and a Bachelor of Education. She has 15 years of experience in operations and project management and has provided effective and successful leadership on projects in the fields of education, finance and manufacturing. Janice Rowe has worked as a fundraising professional in the non-profit sector for health and education charities and brings experience working with funders, grants, and reporting to her role at Niagara College.

Read their full bios HERE.

FOOTWORK ORTHOTICS

Title: Advancing Orthotics Manufacturing with Additive Manufacturing techniques

Duration: 8 months

Team: Ben Laurence, Mike Pollard

Funding Source(s):

- FedDev ICP
- Partner In-Kind Contribution
- Partner Cash Contribution

GRIMO NUT NURSERY PROTOTYPE

Title: A hard nut to crack, The Heartnut Cracker

Duration: 8 months

Team: Gordon Marezki, Brian Cunningham, Jacob Morris

Funding Source(s):

- FedDev ICP
- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

MORTIMER'S FINE FOOD

Title: Productivity Assessment

Duration: 6 Weeks

Team: Angela Naar, Justin Vere, Daniela Cortes

Funding Source(s):

- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

NIAGARA FASTENERS

Title: Productivity Assessment

Duration: 6 Weeks

Team: Dave Henderson, Daniela Cortes

Funding Source(s):

- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

HI-REL

Title: Productivity Assessment

Duration: 6 Weeks

Team: Rick Baldin, Andrew McCuaig, Daniela Cortes

Funding Source(s):

- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

SNOW-LUTIONS

Title: Developing a winterized de-icing proof-of-concept spray head

Duration: 8 months

Team: Allan Spence, Gabe Bylsma

Funding Source(s):

- FedDev ICP
- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

PAREMTECH

Title: PT Level 2.0 Design Improvements

Duration: 2 months

Team: Allan Spence, Nathan Landry

Funding Source(s):

- FedDev ICP
- Niagara Region
- Partner In-Kind Contribution
- Partner Cash Contribution

RECENTLY COMPLETED APPLIED RESEARCH PROJECTS



AIRBUS HELICOPTERS

Improving productivity of composite material trimming work station through automated solution



B.I.S.E.P

Proof-of-concept mobility accessory prototype



McLEAN ESSENTIAL CARE

Developing massage tools for Perfect-Touch Ball Therapy



RESCUE DOGS

Productivity Assessment

RECENTLY COMPLETED TECHNICAL SERVICES - PARTNERS

The role colleges and institutions play in the region is an important part of preparing work-ready graduates, enhancing the skills of the existing workforce, and fostering entrepreneurship and innovation. The technical solutions we provide as a college are not just a commercial service, but an experience both for the student and the industry partner alike.

For most of our clients, that experience is taking the time to help students learn what they need to know in order to

be better at what they do, and understand the value of what commercial companies can do for them in the long term.

We locate the Innovators, and then help them engage with private-sector companies in a more robust manner. Through technical service projects, the Walker Advanced Manufacturing Innovation Centre would like to thank the companies that have provided our students with real-world learning opportunities in additive manufacturing, 3D reality capture, and reverse engineering applications.



Do you have an innovative idea but lack the resources to bring it to life?

MEET WITH US. WORK WITH US.

- t** 905-641-2252
- e** ebest@niagaracollege.ca
- w** ncinnovation.ca